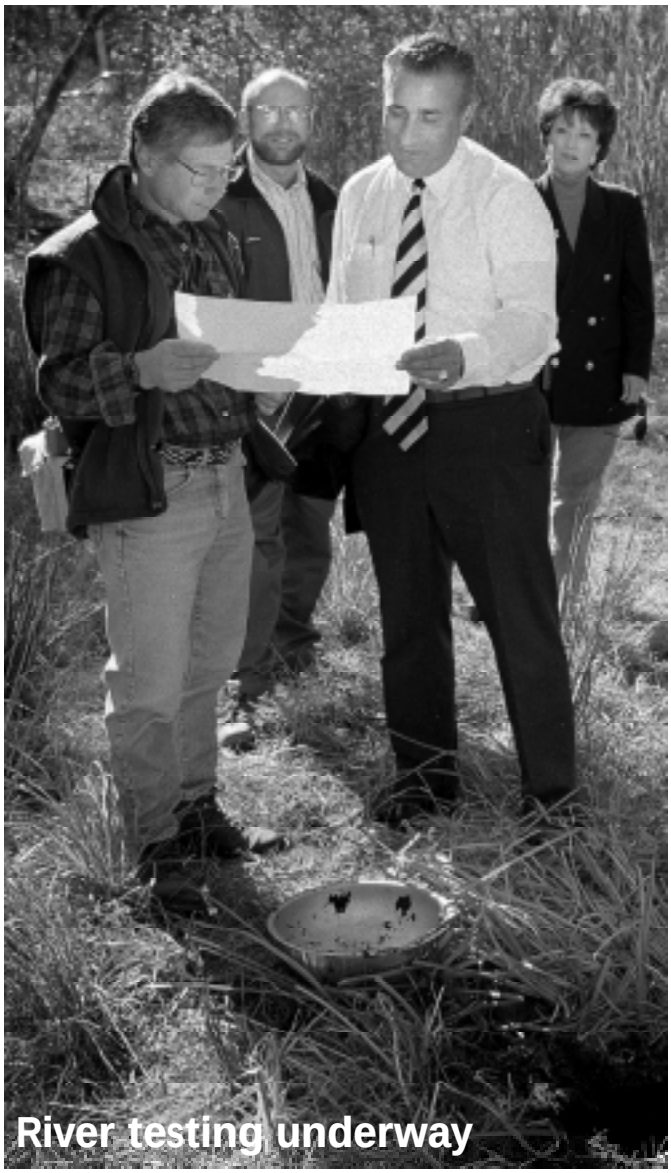
cleanupdate

U.S. Department of Energy/Brookhaven National Laboratory/Associated Universities Inc. — The Office of Environmental Restoration — Vol.2/No.4/Nov. 1997



River testing underway

Suffolk County Legislator Mike Caracciolo (front right) studies Peconic River sampling plans with Office of Environmental Restoration (OER) project manager William Medeiros. A joint sampling project is being undertaken by the U.S. Department of Energy, Brookhaven National Laboratory, Suffolk County and Fish Unlimited, a Shelter Island environmental group (see story, page 2). A sampling container and exposed riverbed sediment are at bottom right. Looking on are legislative assistant Maryann Wowack and OER manager Bob Howe.

Health agency: Water not a risk to area residents

Area residents and Lab employees are not currently at risk from the seven known chemical and radiological plumes at the Brookhaven National Laboratory (BNL) site. That is the conclusion of an agency studying potential health impacts from contaminated groundwater at BNL.

On October 14, the Agency for Toxic Substances and Disease Registry (ATSDR), a division of the U.S. Department of Health and Human Services, released its *Health Consultation Report* and an equally important *Addendum* to the report.

The Agency began the consultation at the request of the U.S. Department of Energy (DOE) as part of the ongoing Superfund cleanup at BNL. The purpose of the Health Consultation was to examine the groundwater quality and determine the potential impact, if any, to public health if area residents were to use water from their private wells for drinking or bathing.

Although the ATSDR confirmed the existence of the seven on- and off-site plumes previously documented by BNL's Office of Environmental Restoration (OER), the

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Cleanup work continues independent of report

From Bob Howe, Manager, Office of Environmental Restoration

My staff and I are glad to see that the report issued by the Agency for Toxic Substances and Disease Registry (known as the ATSDR) confirms the results of investigations by the Office of Environmental Restoration. Both sets of investigations show that the plumes originating from BNL are not adversely affecting public health.

Although the ATSDR report is reassuring, much work remains to be done. We have many completed and ongoing remediation projects (see

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update

Peconic River report expected, sampling project underway

Review of a report focusing on the Peconic River and contamination at Brookhaven National Laboratory's (BNL) sewage treatment plant is continuing.

Following the collection and analysis of additional data by the New York State Department of Environmental Conservation, release of the "Operable Unit V Remedial Investigation Report" has been delayed until late fall. This is to provide time for additional regulator review and comment on this data. The document was originally scheduled to be available for public review earlier this fall.

A public meeting on remediation alternatives for contaminated sediments in the Peconic is expected to be held during the winter of 1997/98.

In a related note, BNL and the U.S. Department of Energy are participating in a river sampling program with the Suffolk County Department of Health Services and a Shelter Island environmental group, Fish Unlimited. The project began in October, with sediment and plant samples collected and split three ways among the groups. Five different New York State-approved laboratories will analyze the samples, and results will be documented in a report to be released next year.

The goal of this effort is to help regain the community's trust by verifying contaminant levels reported by BNL. ■

Winter public meeting planned on radioactive soils cleanup

Extended review of cleanup plans has delayed release of the "Operable Unit I (OU I) Proposed Plan," and the "Draft Feasibility Study Report for OU I/Site Wide Radiological Soils." The two documents were originally scheduled for a fall 1997 release.

Despite this delay, a December public meeting regarding remediation alternatives for site-wide radiologically contaminated soils is still expected. The meeting and associated poster sessions will be held during a public comment period on the two reports, now expected to begin in December.

Once dates are set, notification letters will be sent to the Office of Environmental Restoration (OER) mailing list, and meeting dates and times will also be listed on the OER web site (www.oer.dir.bnl.gov).

The two reports follow a remedial investigation completed in June 1996.

The Proposed Plan and Feasibility Study will be available at the Lab's information repositories (for locations, see page 7). A public notice will also be published to announce their release. ■

hookupdate

The Suffolk County Water Authority is nearing completion of the U.S. Department of Energy's (DOE) public water hookup project.

As of October 22, installation of water main was complete in all areas except Manorville, where 57,750 feet of the estimated 60,000 feet needed has been installed. Private installations and associated tie-ins continue, with 442 private property installations completed and 226 tie-ins completed. This is out of an estimated 500. Weather permitting, restoration of roadways in all areas will be completed this calendar year.

All hookups are expected to be completed by the end of December. However, unseasonable weather conditions over the next two months could delay completion, particularly with respect to landscaping and roads.

If contacted by the water authority or its plumbing contractor (Twin County Excavating) regarding installation of a final tie-in, please respond in a timely fashion. You can contact Twin County at 476-2490 to schedule an appointment.

Once work in Manorville is done (12/31/97), DOE will consider the project to be complete and there will be little, if any, opportunity for it to provide additional hookups. Please keep in mind the Agency for Toxic Substances and Disease Registry recommends that residents in these areas accept DOE's public water hookup offer (see story, page 1). ■

cleanupdate A bi-monthly newsletter from the Office of Environmental Restoration (www.oer.dir.bnl.gov) at Brookhaven National Laboratory, *cleanupdate* is part of an on-going effort to inform people about environmental restoration issues and activities at the Lab. If you would like to be on the Office of Environmental Restoration mailing list, or if you have any questions about the cleanup, please contact:

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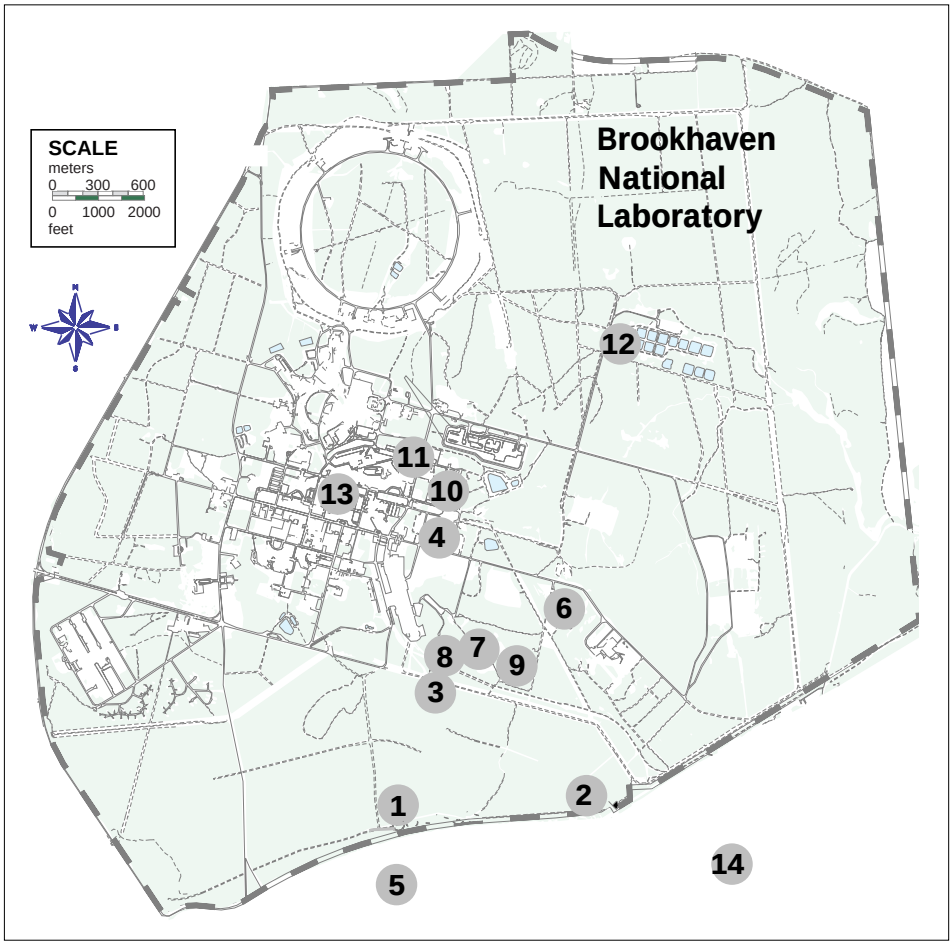
Completed projects adding up as Lab cleanup moves forward

Since 1989, when BNL was listed as a Superfund site, the Environmental Restoration program has been working towards one primary goal - the long-term protection of human health and the environment. To reach this goal the program has focused on eliminating sources of contamination and cleaning up areas where contamination has migrated (i.e., groundwater plumes).

Over the past three years, the Office of Environmental Restoration (OER) has continued to move the cleanup program from investigation to active remediation. This has included the construction of several soil and groundwater treatment systems; the conclusion of two "fast-track" cleanup actions; and research into new technologies.

Following are OER highlights since 1994, keyed by number to their location (see map, right):



Groundwater projects

1,2 – Groundwater Treatment Systems Installed: These two systems, completed in December 1996 and June 1997, use extraction wells at the Lab's southern boundary to remove more than 1,300 gallons per minute of contaminated water from the aquifer, preventing further off-site migration of contaminants. After extraction, two "air strippers" are used to remove the contamination before the clean water is recharged.

3 – HFBR Tritium Plume: OER completed extensive characterization of the tritium plume originating from the High Flux Beam Reactor spent fuel pool and constructed a pump-and-recharge system to prevent tritium at levels above the drinking water standard from migrating off-site. The system, which also employs a carbon filter to remove chemical contamination, began operating in May 1997.

4 – Soil/Groundwater Treatment System Constructed: As part of the cleanup of the Central Steam Facility, OER completed the design and initiated construction this summer of an air sparging/soil vapor extraction system to remediate residual soil and groundwater contamination at the site of a 1977 oil/solvent spill. The system is expected to be operational later this month (see story, page 7).

5 – Off-site Treatment System Designed: This fall, OER initiated the design of an offsite groundwater treatment system for part of a contaminant plume that has moved south of the Lab's southern boundary at depths of 180 to 300 feet below land surface. System construction is expected to begin in summer 1998.

Landfill projects

6 – "Current" Landfill Capped: The eight-acre "Current" landfill, used by the Lab from 1967 to 1990, was capped with an impermeable liner in a project completed in November 1995, preventing rain from carrying contamination into the groundwater.

7 – "Former" Landfill Capped: The eight-acre "Former" landfill, used by the U.S. Army until 1947 and BNL until 1966, was capped in a project completed in November 1996.

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The Superfund Process at BNL

This updated diagram shows Brookhaven National Laboratory's progress through the many steps of the Superfund cleanup. One chart is for "removal actions" (right) and the other for "operable units" (below).

The Lab's cleanup is organized into six administrative segments, each representing a geographic area of the Lab site . The soil and groundwater in the "operable units" are investigated to see if past Lab practices have left contamination with the potential to impact human health and/or the environment. If contamination is found, BNL's Office of Environmental Restoration works with the federal, state and local officials, and the public, to determine the appropriate cleanup remedy.

A "removal action" occurs if contamination is found that could pose a threat to public health or the environment. The action is taken as quickly as possible to eliminate the potential threat. Five removal actions are complete and two are close to completion.

In the cleanup process, completion of a given step usually means the issuance of a major report. These reports are listed in quotation marks across the top section. Below are the actual or anticipated dates when regulators release these reports to the public. Future dates are scheduled in the "Schedules Document," which proposes the timetable for each operable unit and removal action.

These schedules, approved by the U.S. Department of Energy, the U.S. Environmental Protection Agency and the New York State Department of Environmental Conservation, are updated at least annually and may change based on the time needed to review and finalize draft reports. Also listed above the columns are the cleanup-related activities that do not result in major reports—sampling, analysis and evaluation of data and public participation—but play major roles in the cleanup process.

The completed reports listed here, as well as the Schedules Document, are available for public review as part of the "Administrative Record" of the BNL cleanup. Complete sets of the Administrative Record are available at the Lab's four information respositories (for locations, see page 7). Document summaries, meeting schedules and other public participation information can be also be found at the OER web site (www.oer.dir.bnl.gov).

REMOVAL ACTIONS

	Investigation/Study: "Work Plan" "Health & Safety Plan" "Sampling & Analysis Plan"	Investigation/Study: Field investigation, sampling & analysis data	Investigation/Study: "Engineering Evaluation/ Cost Analysis"	Investigation/Study: Public participation, press releases, public notices, information meetings	Decision: "Action Memorandum" (Includes comments & responses in "Responsiveness Summary")	Design: Design phase of Remedial Action	Cleanup: Begin actual cleanup	Closure: "Closeout Report"
Removal Action I D Tanks	completed 7/91	Field work and evaluation	completed 7/93	On-going	completed 9/93	completed 8/94	8/94	DONE 12/95
Removal Action II 12 Underground storage tanks	completed 7/94		N/A		N/A	completed 3/95	7/95	DONE 4/96
Removal Action III Cesspools	completed 7/91		completed 2/94		completed 3/94	completed 4/94	7/95	**11/97***
Removal Action IV Bldg. 479 PCB soil remediation	completed 1/92		N/A		N/A	N/A	5/92	DONE 3/93 Immediate removal action
Removal Action V OU I Groundwater removal	completed 9/92		completed 12/95		completed 12/96	completed 5/96	5/96 Initiated public water hook-up 12/96 Initiated ground-water cleanup	DONE 12/96
Removal Action VI 1. Current landfill 2. Former landfill 3. Glass holes	completed 10/93		completed 4/95 Current & Former landfill closure completed 4/97 "Evaluation of Alternatives Report for Glass Holes"		1. completed 12/94 2. completed 7/95 3. completed 5/97	completed 7/94 completed 8/95 completed 11/96	5/95 5/96 5/97	DONE 6/96 DONE 3/97 **3/98***
Removal Action VII Bldg. 464 Mercury soil remediation	completed 7/94		N/A		completed 2/95	N/A	7/94	DONE 2/95 Immediate removal action

OPERABLE UNITS

	Investigation/Study: "Scope of Work"	Investigation/Study: "Remedial Investigation/ Feasibility Study/Work Plan" (Include "Sampling & Analysis Plan" "Health & Safety Plan")	Investigation/Study: Remedial Investigation (Field work)	Investigation/Study: "Remedial Investigation/ Risk Assessment Report"	Investigation/Study: Feasibility Study	Decision: "Feasibility Study Report" & "Proposed Plan"	Decision: Public participation, press releases, public notices, information meetings	Decision: Public meeting	Decision: Record of public comments & responses in "Responsiveness Summary" (Included In ROD)	Decision: "Record of Decision" (ROD)	Design: Begin design phase of remedial action	Action: Begin actual cleanup
Operable Unit I Hazardous Waste Management Facility and sitewide radiologically contaminated soils	completed 2/92	completed 10/93 OU I 7/94 OU VI	Field work and evaluation	completed 7/96	Alternative methods of cleanup examined	**12/97***	On-going	**12/97***	**4/98***	**4/98***	**Summer 98***	**Fall 99***
Operable Unit II Waste Concentration Facility, AGS scrap yards, former Low-Mass Criticality Facility, contaminated landscape soils	completed 12/94	completed 1/96		**12/97***		Evaluation of alternatives and cleanup transferred to OU I (To allow for a consolidated effort to clean up all site-wide radiologically contaminated soils.)						
Operable Unit III HFBR Tritium Potable/supply wells, spills, sewer pipes (in the central area)	completed 3/93	completed 10/94		**1/98*** Incorporates additional work on HFBR Tritium Plume		**2/98***		**2/98***	**8/98***	**8/98***	**Fall 98***	**12/99*** (Final remedy) Interim groundwater cleanup operational 6/97
Operable Unit IV Central Steam Facility, Reclamation Facility	completed 9/90	completed 12/91		completed 11/94 completed 11/95 addendum		completed 11/95		completed 12/95	completed 3/96	completed 3/96	5/96	**11/97*** Interim soil cleanup completed 1994
Operable Unit V Contamination related to Sewage Treatment Plant	completed 8/92	completed 3/94		**Fall 97*** Incorporates additional sampling/study of Peconic River		**1/98***		**Winter 98***	**8/98***	**8/98***	**8/98***	**4/00*** Imhoff tank cleanup completed early 1996
Operable Unit VI Ethylene dibromide (EDB) groundwater contamination	included with OU I			Included with OU I		completed 10/96 "Focused" Feasibility Study		completed 11/96	**Fall 97***	**Fall 97***	**Fall 97***	DONE 8/96 Public water hookups initiated 8/96

*** Anticipated dates**

Study released...

(continued from page 1)

Agency stated that "there is no indication that anyone is being exposed to all the contaminants or all the plumes." Based on the sampling results of private residential wells, the Agency has concluded that the contamination, which includes volatile organic compounds (VOCs) and low-level radionuclides, is "not sufficient to produce adverse health effects."

Historical data evaluated

In developing its conclusions and recommendations, the ATSDR studied historical and current results from residential well sampling performed by BNL and the Suffolk County Department of Health Services regarding the causes and current status of the groundwater contamination. It also studied the potential health effects of each of the identified VOCs and radionuclides present in the plumes, both on- and off-site.

ATSDR has also concluded that tritium does not pose a threat to the public health because it has not been detected in concentrations above the drinking water standard (DWS) in off-site or site boundary wells. In addition, on-site drinking water wells are not affected; as a result, no one is being exposed to the tritium contamination. Similarly, strontium-90, which moves extremely slowly in groundwater and is on-site l.5 miles from the BNL boundary, does not pose a threat to public health because it would take several hundred years to reach the site boundary.

The Agency indicated that the levels of VOCs, (including trichoroethene, perchloroethylene, and carbon tetrachloride) and radionuclides (tritium and strontium-90) that have been detected in residential wells are "not expected to cause noncancerous effects." ATSDR specifies noncancerous effects because too few studies on low-level VOC exposure exist to make reliable cancer estimates. Also, there are no testing results from residential wells prior to 1985.

ATSDR and the New York State Department of Health questioned the accuracy of the analytical method that BNL had used for radium-226 for a number of on- and off-site monitoring wells. These wells had originally indicated concentrations well above the DWS of three picocuries per liter. Therefore, new samples were collected and analyzed by a method specific for radium-226. The new method, which is the U.S. Environmental Protection Agency-approved test for radium, indicated levels of radium below the DWS. As a result, in the *Addendum* to the report, the ATSDR has changed its conclusions and recommendations to exclude radium-226 as one of the radionuclides that is present in off-site monitoring wells at concentrations above the DWS.

Analysis to continue

The ATSDR will continue to analyze monitoring and residential well data to determine whether contaminant levels pose a future threat to public health. In reviewing the data from off-site residential wells, the ATSDR concluded that because the depths of these wells are uncertain and the full extent of the VOC plumes has not been determined, there is potential for these wells to become contaminated over time. Residents can avoid the potential for future exposure by accepting the DOE offer of free public water hookups. The Agency recommended that residents of Shirley and Manorville accept the offer because the public well fields are not contaminated and are routinely monitored.

The Agency further advised that residential wells in areas of North Shirley, Shirley, and Manorville where homes have not been connected to public water should continue to be monitored. Also, new residents should be advised not to use their wells until the water has been tested for contamination.

Air consultation underway

ATSDR is also in the process of carrying out an air quality consultation, which is expected to be released in late 1998. Historic and current air emissions from BNL facilities will be reviewed to determine if they present a potential health risk to the public or BNL employees.

The *ATSDR Health Consultation Report* is now available for public review and comment. The public comment period (which ends December 9, 1997) allows people to review and comment on the findings, determine whether community health concerns have been adequately addressed, and provide the ATSDR with additional information. The report can be found at BNL's four information repositories (for locations, see page 7). To contact ATSDR, call 1-800-447-1544 or visit its web page at http://atsdr1.atsdr.cdc.gov:8080/. ■

ATSDR recommendations:

• Residents of Shirley, North Shirley/East Yaphank and Manorville should accept the U.S. Department of Energy's offer of free public water hookups.

• Testing of residential wells in areas of Shirley, North Shirley/East Yaphank and Manorville that have not been connected to the public water supply should continue.

• New residents of these areas should be advised not to use their wells until their water has been tested.

Accomplishments...

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8 – "Interim" Landfill Capped: This fall, OER completed the design and initiated construction of an impermeable cap for the Lab's "Interim" landfill, used in 1966. The project was completed in October 1997.

9 – Chemical/Animal Pits-Glass Holes Excavated: This project, begun in June 1997, involved the excavation of 55 former waste pits near the Lab's "Former" landfill. The pits, used from the late-1950s to 1981, were a source of groundwater contamination. Excavation was completed in August, and sorting and off-site disposal of pit contents is ongoing.

Storage tank removal

10 – D-Tanks Dismantled: in a project that began in August of 1994, OER dismantled three 100,000-gallon low-level radioactive waste storage tanks and transported them off-site for disposal**.**

11 – Storage Tanks Removed: In this project, begun in July 1995, six out-of-service underground storage tanks that formerly contained hazardous and radioactive waste were emptied, removed and disposed of off-site**.**

12 – Imhoff Tanks Emptied: OER removed 64,000 gallons of sludge, some containing low levels of radionuclides, from aging settling tanks at the Lab's Sewage Treatment Plant in 1995. The sludge was taken off-site to a permitted waste disposal facility, and the tanks themselves were dismantled in the spring of 1997.

13 – Cesspools Removed: As part of OER's mission to remove potential sources of contamination, the office began the sampling and removal of 28 former site cesspools in 1995. The project was completed in 1997.

Water hookups

14 – Public Water Hookups Offered: Beginning in January 1996, the U.S. Department of Energy offered free hookups to public water as a precautionary measure to approximately 1,300 residents and business owners in the North Shirley, East Yaphank and Manorville areas south and east of the Lab.

While OER has made substantial progress in the ongoing Superfund cleanup at BNL, more work remains to be done. Investigations in three other areas of the Lab are still under way, and, as 1998 approaches, several more cleanup efforts will begin. These include the removal of eight additional underground storage tanks and treatment of an off-site groundwater contaminant plume.

For a complete schedule of past and future cleanup activities and document release dates, see BNL's Superfund schedule, pages 4-5 in this issue. ■

Innovative cleanup system set to begin later this month

Work is nearing completion on a new remediation system at the Lab's Central Steam Facility.

Forty-eight air sparging and 23 soil vapor extraction wells have been installed to remediate soil and groundwater contaminated by a 1977 oil/solvent spill. The system, located in the Lab's central area, is expected to be operational by the end of November (see #4 in story and on map).

Construction on the $1.3 million project began in June. The system is expected to operate for at least two years. ■

contacts

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Gail Penny, (516) 344-3429, gpenny@bnl.gov
U.S. Department of Energy, Brookhaven Group
Building 464, Upton NY 11973

Libraries — All reports from BNL's Office of Environmental Restoration are available at:

Longwood Public Library
800 Middle Country Road
Middle Island NY 11953
516-924-6400
e-mail:
helpdesk@suffolk.lib.ny.us

Mastics-Moriches-Shirley
Community Library
301 William Floyd Parkway
Shirley NY 11967
516-399-1511
www.li.net/~mmscl

BNL Research Library
Building 477A
Brookhaven Avenue
Upton NY 11973
516-344-3483
http://www.bnl.gov

U.S. EPA Region II Library
Administrative Records Room
290 Broadway
New York NY 10007-1866
212-637-4296

cleanupdate

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Message...

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story, page 3) and are starting new ones in 1998 to ensure that existing contamination, both on- and off-site, is cleaned up. We are also working to prevent further contamination from occurring.

Groundwater remediation

Three groundwater pump-and-treat systems have been put in place in the past year, two at the Lab's southern boundary and one as part of the remedial technologies treating the volatile organic compounds (VOCs) in the tritium plume. The wells in these systems are removing more than 1,300 gallons per minute of contaminated water. The two systems at the southern boundary clean groundwater contaminated with VOCs. The system addressing the tritium plume will prevent tritium above drinking water standards from moving beyond the Lab's southern boundary. It consists of a pump-and-recharge system in which the extracted water is carried about one mile north to a recharge basin, where it is discharged. This gives the tritium additional time to naturally decay and dilute as it slowly moves south.

Soil remediation

We also have important soil remediation projects underway. These employ innovative and effective technologies, such as soil vapor extraction, which will be used to remediate contaminated soils in the central portion of the Lab. Air sparging will also be a part of this system, treating area groundwater.

We have just completed remediation at the Interim Landfill as part of a "fast track" removal action. The landfill was capped, which means it was covered with an impermeable liner and clean soil and then seeded. This prevents rainwater from entering the landfill waste and carrying contaminants into the groundwater.

This summer we completed soil cleanup at the Chemical/Animal/Glass Pits, where pit contents and contaminated soils were excavated. This action eliminated the threat of additional groundwater contamination. The excavated soil will be sorted, and any soil that is found to be hazardous and/or radioactive will be disposed off-site.

Future efforts

As part of our efforts to clean up off-site contamination, we have recently evaluated in-well air sparging and pump-and-treat systems for remediation of an off-site VOC plume. A pilot study has shown us that air sparging would be effective in treating this plume. We have also begun to study alternatives to remediate the sediments in the Peconic River. In addition, we are making plans to clean up radiologically contaminated soils on-site beginning in 1999.

OER will continue its efforts to clean up on- and off-site contamination in the groundwater and soil. By issuing its positive findings in the *Health Consultation Report* and *Addendum*, ATSDR has provided a document that we hope will reassure area residents who are concerned about potential adverse health effects from BNL activities. We appreciate the Agency's work and will continue to work with it to ensure that threats to the public health are appropriately addressed. ■